

RESEARCH ARTICLE

Effect of Direct Education on Breast Self Examination Awareness and Practice among Women in Bolu, Turkey

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Abstract

Aims: To evaluate breast self examination (BSE) practice and the effect of a training program conducted by healthcare professionals on BSE. **Materials and Methods:** Women were randomized into control and test groups with both groups completing a questionnaire and three independent interviews where their BSE practices were evaluated. **Results:** In all, 39.5% of the participants were previously provided information on BSE by healthcare professionals while 25.8% had no knowledge of BSE prior to enrollment. Compared to those informed about BSE through other means such as television, radio, and the internet, the scores of the first, second, and third visits were higher ($p < 0.05$) in individuals who received BSE education from healthcare professionals and hospitals. **Conclusions:** BSE training provided by healthcare professionals may increase early breast cancer diagnosis and treatment rates by improving BSE awareness and practice.

Keywords: Breast self examination - education interventions - knowledge - screening practice - Turkey

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Introduction

Breast cancer (BC) affects women across the world. It accounts for 14% of cancer deaths and 23% of new cancer cases. Sixty percent of cancer deaths occur in developing countries (Juan et al., 2004; Ozmen, 2011; Jamal et al., 2011). According to national data from the Ministry of Health of the government of Turkey in 2008, BC is now the most common cancer among women, with a frequency of 41.6 cases per 100,000 individuals (Republic of Turkey, 2011).

Screening programs allow for early diagnosis of cancer and are crucial for better prognosis and long-term survival. The Ministry of Health recommends breast self examination (BSE) and clinical breast examination (CBE) for all women beginning at age 20 years. For at-risk women between the ages of 40 and 49 years, screening intervals are determined by the treating physician. Screening is recommended biannually for women over the age of 50 years regardless of the presence of risk factors (Republic of Turkey, 2008). However, insufficient data are available on the approach to breast health, information, behavior, and attitude of Turkish women.

We evaluated the effectiveness of the designed training program by determining its effect on the BSE practices of women in our family practice office

Materials and Methods

Participants

Bolu is a city with a population of approximately

140,000. The healthcare system of our city adopted a family practice model on October 16, 2006, and is amongst the cities in which the practice is carried out systematically.

We invited women between the ages of 20 and 49 years registered in our family practice clinic to participate in our case-control study. Potential participants were contacted by telephone between December 2012 and July 2013. Those who chose to participate were enrolled following completion of an informed consent document. Based on their respective order of enrollment, the female subjects were randomized into either the control or the test group.

Pregnant and breastfeeding women were excluded from the study due to concern physical distress would affect their compliance with the scheduled appointments and thus the overall outcome. Patients who missed their scheduled appointment were given one phone call and reminded of their appointment. Patients who did not complete all appointments were excluded from the study. The study was completed with 144 and 112 qualifying subjects in the test and control groups, respectively.

Procedure

The questionnaire was developed in a preliminary study at our clinic and re-reviewed with patients in our clinic to test the questions for proper clarity. The questionnaire containing 22 questions was completed for each participant by the physician at our clinic during the initial face-to-face interview (the first of three conducted to evaluate BSE practices). It consisted of two sections. The first contained questions addressing socio-demographic

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information and BC risks. The second section gathered information on breast health screening behaviors and the frequency of screening among respondents.

BSE training for participants was conducted in two ways: via brochures and instruction by a healthcare professional.

A 12-line BSE form was used to score interviews (in terms of evaluation performance) based on a training brochure normally given to women in our clinic (Republic of Turkey, 2008). For each item, a score of two was given for full performance, one for partial performance, and zero for non-performance. Radiation examination was determined to be a more preferable evaluation method by our participants, was selected and described.

First interview

After completing the survey during the first interview, both groups were educated on the importance of breast health, factors causing BC, BC symptoms, and the importance of BSE. The control group was asked to perform BSE under the supervision of a physician. Then the participants were given a leaflet about BSE prepared by the Ministry of Health for review. The subjects were scheduled for a return visit in 2 months and dismissed. The test group was also asked to perform BSE under the supervision of a physician. The subjects were educated by the physician on the proper technique for each BSE step. Sections not understood by the participants were repeated. Participants were scheduled for a return visit in 2 months once they were fully capable to perform the evaluation.

Second interview

Two months after the first interview, the test group was asked to perform the BSE steps they remembered from the previous interview. This exam was scored and information was given a second time for reinforcement. The control group was also asked to perform a BSE and scored for performing and describing the details they read in the leaflet. Participants who had lost their leaflet for any reason were given another. Both groups were scheduled for a follow-up visit in 2 months.

Third interview

During the third appointment held 4 months after the first appointment, both groups were scored as in the second interview. Because it was the last appointment, the control group also received breast evaluation by the doctor. All participants were informed about the function of our provincial Early Cancer Diagnosis and Treatment Center. While they differed at each individual step, the duration of the interviews varied between 15 and 45 min.

Patients for whom pathology was identified in either self evaluation or our examinations were referred to the medical center and excluded from study to avoid inconsistency with the controls.

Statistical analyses

Data were evaluated using the Statistical Program for Social Sciences (SPSS 20) software package. A Mann-Whitney U Test was used to test differences across groups for abnormally distributed variables. A Kruskal-

Wallis H test with Bonferroni correction was employed for abnormally distributed variables in more than two groups. The Wilcoxon signed rank test was used for the abnormally distributed variables when testing the score differences between the groups based on their arrival time. Between-groups differences were analyzed using 95% confidence intervals.

Results

The average age of the women was 34.97 ± 7.17 and 35.03 ± 7.71 in the test and control groups, respectively. The socio-demographic information of the participants is shown in Table 1. Among all participants, 7.1% of controls and 2.8% of the test group had a family history of BC. The percentage of participants with a family history of other cancers was 16.1% and 14.1%, respectively. Having a family member diagnosed with BC or any cancer type had no impact on BSE ($p > 0.05$) or CBE ($p > 0.05$) behaviors.

While 39.5% of the participants obtained prior information on BSE from healthcare professionals, 25.8% of participants had no knowledge of BSE prior to enrollment in this study. The percentage of subjects who performed a BSE during the past year was 47.3% in the control and 33.3% in the test group, with 9.4% and 8.3% within each group performing regular BSEs. The status of and reasons for breast examination among participants within the past year are shown in Table 2.

None of the study participants had a history of prior breast tissue radiation exposure. The body mass index of the subjects was greater than 30 for 18.1% of the test and 29.5% of the control group. When questioned about exercise, 47.9% of subjects in the test and 29.5% in the control group said they never exercised. In the test group, 30% were smokers for greater than 10 years compared to 24% in the control group.

Growing older increased BSE ratio by a factor of 1.4 and increased CBE by a factor of 1.5 among the women. Higher education level increased BSE and CBE ratios by 3.4 times. The BSE performance ratio was 6.3 times higher in married women than single/widowed women and that of CBE was 3 times higher in married women.

While prior BSE performance during the past year was associated with a significant difference between scores for each interview, the scores for the first and second interviews of patients who previously performed BSE were significantly higher ($p < 0.05$) than those who had not performed BSE prior to study enrollment and had no previous knowledge of BSE.

Scores increased significantly ($p < 0.05$) with each subsequent interview. No statistically significant difference was found between the control and test groups in terms of the scores for the first and second visits. The scores for the final visit were higher for the test group than for the control group ($p < 0.05$) (Table 3). Scores were higher amongst women who had performed BSE prior to study enrollment at each of the three interviews ($p < 0.05$) (Table 4)

The scores for the final visit were higher in subjects who performed regular BSEs throughout the study ($p < 0.05$). BSE was performed between interviews by

Table 1. Distribution of Variable Frequency in Test and Control Groups

	Control		Group Test		Total	
	N	%	N	%	N	%
Age Range						
20-25	13	11.6	16	11.3	29	11.4
26-30	18	16.1	20	13.9	38	14.8
31-35	32	28.6	40	27.8	72	28.1
36-40	19	17	32	22.2	51	19.9
41-45	17	15.2	26	18.1	43	16.8
46-49	13	11.6	10	6.9	23	9
Education Status						
Non educated	0	0	0	0	0	0
Educated	0	0	4	2.8	4	1.6
Primary school	76	67.9	104	72.2	180	70.3
High school	31	27.7	34	23.6	65	25.4
University	5	4.5	2	1.4	7	2.7
Employment status						
Yes, employed	31	27.7	30	20.8	61	23.8
No, student	5	4.5	3	2.1	8	3.1
No, retired	2	1.8	2	1.4	4	1.6
No, not employed	74	66.1	109	75.7	183	71.5
Income						
Equal income and expense	91	81.3	105	72.9	196	76.6
Income higher than expenses	14	12.5	26	18.1	40	15.6
Income lower than expense	7	6.3	13	9	20	7.8
Insurance						
Yes	107	95.5	140	97.2	247	96.5
No	5	4.5	4	2.8	9	3.5
Chronic condition						
Yes	13	11.6	21	14.6	34	13.3
No	99	88.4	123	85.4	222	86.7
Breast disease in the family						
Yes	2	1.8	0	0	2	0.8
No	110	98.2	144	100	254	99.2
Marital Status						
Married	89	79.5	127	88.2	216	84.4
Single	17	15.2	9	6.3	26	10.2
Widowed	6	5.4	8	5.6	14	5.5
Contraception method						
Hormones less than a year	0	0	2	1.4	2	0.8
Hormones more than a year	9	8	14	9.7	23	9
No hormones	73	65.2	107	74.3	180	70.3
Single	23	20.5	17	11.8	40	15.6
No contraception	7	6.3	4	2.8	11	4.3
Number of children						
None	28	25	16	11.1	44	17.2
1_2	77	68.8	118	81.9	195	76.2
3 and more	7	6.3	10	6.9	17	6.6
Regular medicinal drug use ?						
Yes	14	12.5	26	18.1	40	15.6
No	98	87.5	118	81.9	216	84.4
Cigarette smoking						
Yes	18	16.1	27	18.8	45	17.6
No	94	83.9	115	79.9	209	81.6
Former smoker,quit	0	0	0	0	0	0
Other	0	0	2	1.4	2	0.8
TOTAL	112	100	144	100	256	100

Table 4. Comparison of Information Scores Based on BSE Practice During Visits

	Did you perform a breast self evaluation during the past year?	Friedman test						Dual comparison			
		n	Mean	Median	Min	Max	SS				
Yes	First visit score	101	6.7	6	0	24	4.9	1	101	0.000	1-2
	Second visit score	101	14.5	14	5	24	4.6	2.1			
	Last visit score	101	20.1	24	9	24	4.7	2.9			
No	First visit score	89	3.6	0	0	24	5.4	1.1	89	0.000	1-2
	Second visit score	89	12.9	12	5	24	4.5	2			
	Last visit score	89	19	20	6	24	5.1	2.9			
Never heard before	First visit score	66	0.2	0	0	6	1	1	66	0.000	1-2
	Second visit score	66	11.8	12	6	24	4.4	2.1			
	Last visit score	66	17.2	16	10	24	4.2	2.9			

63.6% of participants who retained the leaflet provided during their first and second interview compared to only 34.6% of those who did not retain the leaflet, a significant difference ($p<0.05$). Likewise, evaluation scores for the last interview were significantly higher for participants who retained the leaflet compared to those who did not ($p<0.05$).

Table 2. CBE Status of Study Subjects

	Control		Group Test		Total	
	N	%	N	%	N	%
Did you attend a breast evaluation by the doctor during the past year?						
Yes	36	32.1	37	25.7	73	28.5
No	76	67.9	107	74.3	183	71.5
If yes,why?						
You went to the doctor's office for your complaint	18	50	26	70.3	44	60.3
You wanted to be examined even if you had no complaints	17	47.2	11	29.7	28	38.4
The doctor asked you to undergo regular examination	1	2.8	0	0	1	1.4
Other	0	0	0	0	0	0
Post-treatment control	0	0	0	0	0	0
If no, why?						
Negligence	22	28.9	29	27.1	51	27.9
No need	33	43.4	55	51.4	88	48.1
Not recommended by the doctor	21	27.6	16	15	37	20.2
Fear of something negative	0	0	5	4.7	5	2.7
Embarrassment	0	0	2	1.9	2	1.1
Other	0	0	0	0	0	0
Did you undergo breast USG during the past year?						
Yes	30	26.8	20	13.9	50	19.5
No	82	73.2	124	86.1	206	80.5
Did you undergo breast USG during the past year?						
Yes	18	16.1	15	10.4	33	12.9
No	94	83.9	129	89.6	223	87.1
Total	112	100	144	100	256	100

*CBE:Clinical breast examination

Table 3. Comparison of Information Differences among Groups between Visits

	N	Mean	Median	Mim	Max	SS	Mann Whitney U Test	
							Mean Rank	U
Information difference between the first and second visit							6908.5	0,049*
Control	112	8.5	8	-4	18	4.5	118.2	
Test	144	9.9	9.5	0	24	4.8	136.5	
Total	256	9.3	9	-4	24	4.7		
Information difference between the first and last visit							4511	0,000*
Control	112	12.7	13	0	24	5.3	96.8	
Test	144	16.8	17	-1	24	5.7	153.2	
Total	256	15	15	-1	24	5.9		
Information difference between the second and last visit							5142	0,000*
Control	112	4.2	3	-4	14	3.5	102.4	
Test	144	6.9	7	-6	18	5.1	148.8	
Total	256	5.7	5	-6	18	4.7		

* $p<0.05$

Scores for all interviews were significantly higher in individuals who were educated about BSE by healthcare professionals or hospital awareness programs compared to participants who obtained information about BSE through other sources such as television, radio, and the Internet ($p < 0.05$).

Discussion

The early diagnosis of BC is among the most important factors for reducing morbidity and mortality. Early diagnosis is only possible with proper screening methods. The majority of studies performed on screening programs have demonstrated that screening is able to control BC at an early stage and that the stage and the histopathological grade of cancers in women who received early screening are lower compared to the normal population (Andersson ve Janzon, 1997; Chu et al., 1988).

The selection of convenient, cost-effective methods for increased BC awareness, screening, and diagnosis is particularly important in developing countries (Mittra et al., 2000). The low survival rates for BC in underdeveloped countries are associated with advanced-stage diagnosis of disease mainly due the lack of early diagnostic programs (Gupta, 2009).

BSE is a free, easily applicable method of early BC screening. Individuals who perform BSE tend to have more knowledgeable of BC (Dündar et al., 2006). However, many women refrain from using this technique due to a lack of self confidence, shortage of time, and embarrassment associated with manipulation of the breast (Lierman et al., 1994; Stillman 1997). However, regularly performed BSEs would provide reference information on the breast, thereby enabling a woman to know her breast tissue and notice any potential changes. The lack of BC awareness among young women results in BC diagnosis at progressed stages. This, again, leads to further increased mortality rates (Anders, 2008).

In our study, groups were trained using practical educational methods on BSE, and the methods were evaluated for their potential benefits.

Given the improved awareness of breast health in rural areas and developing countries with little to no access to healthcare services and the increased level of information on CBE mammography, BSE should be given importance and encouraged (Dişçigil, 2007). Although BSE awareness is 90% amongst women in developed countries, only 15-40% actually conduct the exams (Friedman, 1994). Tavafian et al. (Tavafian, 2009) found that 31.7% of women had performed BSE once, but only 7.1% were practicing it on a regular basis. Al-Dubai (Al-Dubai et al., 2012) reported that about 55.4% of respondents had performed a BSE, but only 28.5% performed the examination monthly. A study conducted in the Tekirdağ province (Gürdal et al., 2012) showed that 27.4% of women performed BSE regularly while 68.5% had performed at least one BSE. Donmez et al. (Donmez et al, 2012) reported that 61.3% of subjects were unaware of breast evaluation and while 49.2% performed BSE, only 15.4% did so once each month. In the present study, 47.3% of participants in the control group and 33.3% of

participants in the test group had performed a BSE within the past year. Only 9.4% and 8.3% of these participants were performing BSE on a regular basis. The very low number of subjects regularly performing BSE indicates that a health behavior model regarding BSE could not be established among the women in our region.

Studies provided effective training increased BC awareness, knowledge of BC risk factors and BSE (Kuhns-Hastings et al., 1993; Wood et al., 2002). Not all women can perform a BSE with equal quality, and thus further training programs are required. In addition to improved levels of information among women, such training programs also increase BSE practice (Ozturk et al., 2000), and different training methods improve the quality of BSE practices (Oliver-Vázquez, 2002; Rao et al., 2005). Ozaras et al. (Ozaras, 2010) found that scores were higher after BSE training. CBEs may be associated with the education status of women (Juan et al., 2004; Achat et al., 2005; David et al., 2005). Indeed, in the present study, information scores significantly improved with the frequency of visits, and exams improved with increased education level. These results demonstrate the role of education in increasing the level of awareness and the practice of BSE among women.

Media, Internet, hospitals, primary healthcare clinics, and friends and acquaintances all assume an important role in the BSE education of society (Thomas et al., 2002), with the Internet, television, hospital, and primary healthcare institutions being the most common sources of information concerning BSE (Gürdal et al., 2012). Karayurt et al. (Karayurt et al., 2008) found that media was the primary source of information on BC for 48.6% of participants. Yoo et al. (Yoo et al., 2012) found that only 17.2% of subjects obtained BSE information from a physician or nurse. In the present study, 39.5% of the subjects obtained their information on BSE from healthcare professionals. We found that scores during all visits were significantly higher in individuals educated on proper BSE techniques by healthcare professionals and hospital programs compared to individuals who obtained this information from sources such as television, radio, and the Internet. This indicates that face-to-face patient education significantly increases BSE awareness. As a consequence, access to information provided by primary care professionals, who are in close personal contact with female patients, is essential for breast health.

Our study was conducted with women in our own service population. In our national family practice program, information is supplied via leaflets handed to patients who apply for family planning or any other reason. It is usually not possible to determine patient understanding of information contained with in these leaflets or to monitor the practice of this information by patients. There are diverse opinions on what constitutes effective BSE training. One of the restrictive aspects of our study was the selection of handouts and the breast-evaluation methods taught by healthcare professionals, which were thought to be feasible for a realistic practice in a polyclinic setting with a highly busy patient population.

Considering that our study is among the first conducted at a family medical center, we believe that our results can

make a difference further studies and training programs.

In conclusion, Oftentimes, a patient can notice a change in her breast. BSE establishes a reference point for an individual's knowledge of her own breast and can be key for early diagnosis. BSE information should be provided by healthcare professionals during the evaluation of female patients at family practices where healthcare services are acquired on a frequent basis. Especially in developing countries, such as our own, training courses addressing individual requirements should be organized, and the effects of such courses should be assessed by feedback. We believe that such efforts will result in increased BSE practice and BC awareness, thereby improving early diagnosis and treatment rates.

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